MICHIGAN DEPARTMENT OF COMMUNITY HEALTH
EPIDEMIOLOGY OF DISEASES OF THE HEART FACT SHEET
DECEMBER, 2002

Diseases of the Heart in Michigan

INTRODUCTION

Diseases of the heart (DOH) includes several different cardiac diseases, such as ischemic heart disease (IHD), rheumatic heart disease, hypertensive heart disease, diseases of pulmonary circulation, heart failure, cardiomyopathy, and dysrhythmias. The term IHD is often used interchangeably with the term coronary heart disease. IHD, the most common form of DOH, can result in angina and myocardial infarction (heart attack). The long-term sequelae of many DOH may include heart failure. Many DOH may be prevented by controlling underlying risk factors, primary prevention efforts or by early identification and treatment of risk factors.

In 2000, DOH was the most common cause of death in Michigan responsible for 27,474 or 32% of all deaths. One in six deaths occurred in persons less than 65. In 2000, there were 158,033 hospital admissions due to DOH. Almost 38% were to patients less than 65 years old.

RACIAL AND GENDER DIFFERENCES

Mortality due to DOH varies among racial and gender groups. As shown in Table 1, mortality rates due to DOH are one to two times higher among African-Americans aged 35-64 and 65-84 compared with Caucasians. Only in the oldest group (85+) are the rates higher in Caucasians.

Table 2 illustrates the striking racial and gender differences that also exist in the average age of hospitalization and death due to DOH. Both hospitalizations and deaths occur approximately five to eight years earlier in African-Americans compared with Caucasians.

AGE-ADJUSTED MORTALITY TRENDS

Trends in age-adjusted mortality rates due to DOH by race and gender (Figure 1) illustrate the differences discussed above. Males have higher mortality rates than females, and within gender groups, African-Americans have higher mortality rates than Caucasians. Mortality rates due to DOH have declined dramatically in recent decades, especially among Caucasians. For example, age-adjusted mortality rates for DOH in Michigan declined 38% for Caucasian males and 34% for Caucasian females, but only 27% and 19% for African-American males and females.

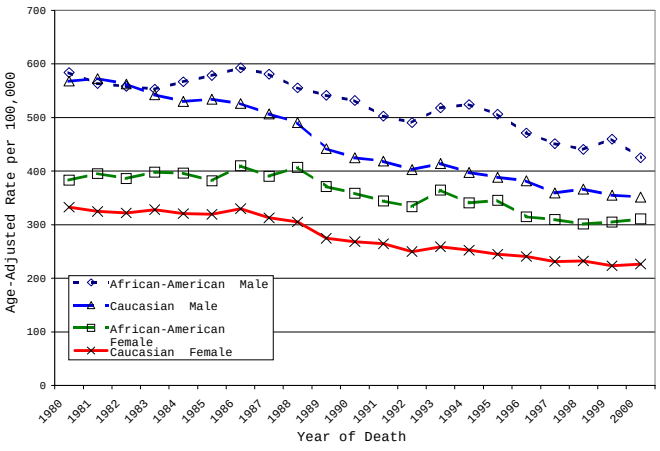
Table 1
Mortality Rate Ratios by Age and Gender
African-American versus Caucasian
Diseases of the Heart, Michigan, 2000

Age Group	35-64	65-84	85 & over
Male	2.0	1.2	0.8
Female	2.0	1.4	0.9

Table 2
Average Age of Hospitalization and Death
Diseases of the Heart, Michigan 2000

	Caucasian		African-American	
	Male	Female	Male	Female
Hospitalization	66.3	72.4	61.3	65.4
Death	74.3	81.9	67.6	74.8

Figure 1
Age-Adjusted Mortality Rates by Race and Gender
Diseases of the Heart - Michigan, 1980 - 2000



AGE-SPECIFIC MORTALITY TRENDS

For the most part, trends in race, gender and age-specific mortality rates mirror the age-adjusted rates presented in Figure 1. However, racial differences are larger in younger age groups, and there is wide variability in the rate of decline in mortality among the different age groups since 1980.

35-64 years old

Figure 2 illustrates the consistent declines in DOH mortality rates among 35-64 year-olds for all four race and gender groups between 1980 and 2000. Rates decreased more dramatically for Caucasians (males -56%; females -49%) compared with African-American (males -34%; females -39%). Although mortality rates are the lowest in this age group, large disparities by race and gender exist.

65-84 years old

Figure 3 displays trends in age-specific mortality due to DOH in 65-84 year-olds. Overall trends are similar to the 35-64 age group although differences by race and gender mortality are less pronounced. The absolute rate of mortality is much higher (1,000 - 1,900 per 100,000 person years) than the 35-64 year age group. In addition, the overall rate of decline of DOH mortality in 65-84 year-olds is less obvious although greater total declines were seen in Caucasians (males -40%; females -34%) than African-Americans (males -23%; females -20%).

85 YEARS OF AGE AND OVER

As can be seen from Figure 4, mortality rates due to DOH are extremely high in this age group (over 5,000 per 100,000 in 2000), and Caucasian rates are now higher than African-American rates. The largest percent decreases were seen for African-American males (-30%), with smaller decreases observed for Caucasian males (-18%) and African-American (-7%) and Caucasian (-17%) females.

Figure 2
Age-Specific Mortality Rate due to Diseases of the Heart
By Race and Gender, Age 35-64, Michigan, 1980-2000

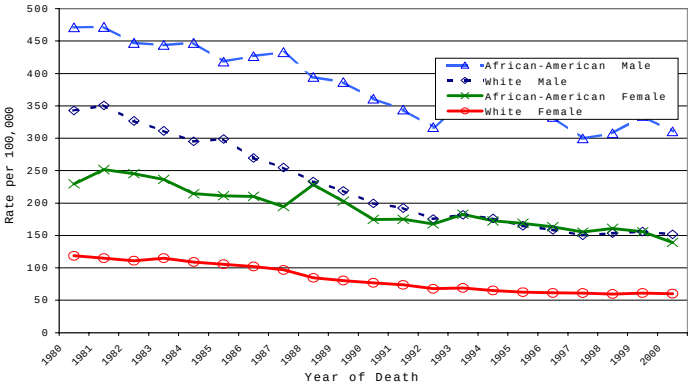


Figure 3
Age-Specific Mortality Rates due to Diseases of the Heart by Race and Gender, Age 65-84, Michigan, 1980 - 2000

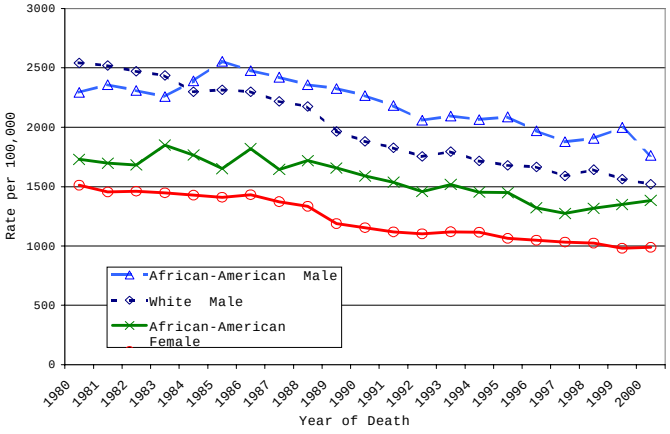
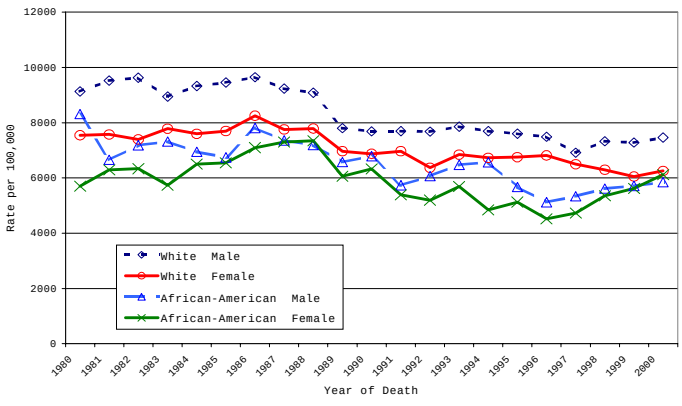


Figure 4
Age-Specific Mortality Rates due to Diseases of the Heart by Race and Gender, 85 and over, Michigan, 1980 - 2000



PRIMARY PREVENTION OF DOH

Identification of risk factors and educating people about life style changes needed to reduce risk factors are crucial to preventing the onset of DOH. Table 3 describes modifiable risk factors that increase the probability of developing heart disease. For example, a person with high blood pressure has over a two-fold increase in the risk of developing DOH.

The population-attributed proportion represents the proportion of disease in a population that is associated with a risk factor. It is dependent on both the prevalence of the risk factor in the population and the relative risk (which measures the magnitude of the association between a risk factor and the disease). Thus, controlling high cholesterol and high blood pressure, increasing physical activity, and quitting smoking would have the greatest effects on reducing the occurrence of DOH. Non-modifiable risk factors for DOH include increasing age, male gender, and family history and heredity.

Table 4 displays results of the 2000 and 2001 Michigan Behavioral Risk Factor Survey which estimates that 71.9 percent of adults in Michigan have at least one potentially modifiable risk factor for DOH. Almost 40 percent have two or more risk factors.

SECONDARY AND TERTIARY PREVENTION OF DOH

Secondary prevention includes the early identification and treatment of persons with DOH (e.g. angina) and their risk factors (e.g. hypertension, high cholesterol). Tertiary prevention includes treatment and rehabilitation of patients who have DOH (e.g. heart attack). In addition to life style changes to improve diet, exercise, weight control and smoking cessation, the American Heart Association (AHA) recommends regular use of low-dose aspirin in patients with DOH. Other secondary prevention treatments include control of high cholesterol and high blood pressure. Following a coronary event, the AHA recommends that these various therapies take place within an overall cardiac rehabilitation program of exercise training, risk factor modification and psychosocial and vocational counseling.

Table 3
Modifiable Risk Factors for Diseases of the Heart[2]

Magnitude of Risk	Risk Factor	Attributed Proportion	Range
Moderate Relative Risk 2-4	High Blood Pressure	25%	20-29%
	High Cholesterol	43%	39-47%
	Diabetes	8%	1-15%
	Cigarette Smoking	22%	17-25%
Weak Relative Risk <2	Obesity	17%	7-32%
	Physical Inactivity	35%	23-46%
	Environmental Tobacco Smoke Exposure	18%	8-23%

Table 4
Risk Factors for Diseases of the Heart
Behavioral Risk Factor Survey, 2002 and 2001

Risk Factor	Michigan	U.S.	Rank
High Blood Pressure	21.7%	NA	NA
Cigarette Smoking	26.1%	22.9%	11
No Leisure Activity	23.5%	25.8%	32
Overweight (BMI>25.0)	61.1%	57.1%	NA
Obesity (BMI>.30.0)	24.7%	21.1%	3
Diabetes (ever told)	7.2%	6.6%	11
High Cholesterol	33.0%	NA	NA
One or more risk factors	71.9%	***	***
Two or more risk factors	38.6%	***	***

GUIDELINES TO REDUCE DISEASES OF THE HEART - AMERICAN HEART ASSOCIATION[1]

1. If you smoke, stop.
2. Know your blood pressure; have it checked regularly, and keep high blood pressure under control.
3. If you have high cholesterol, follow your doctor's recommendations to keep it under control.
4. Keep your weight at the appropriate level.
5. If you are diabetic, follow your doctor's recommendations.
6. Include physical exercise in your daily routine.
7. Eat a lower sodium and low-fat diet.
8. Find out if you have circulation problems and take the prescribed medications if you do.

Resources

Cardiovascular Health, Nutrition and Physical Activity Section
Michigan Department of Community Health
3423 Martin Luther King, Jr. Blvd., P.O. Box 30195
Lansing, MI 48909
517-335-8374

American Heart Association
1-800-AHA-USA1 (1-800-242-8712)
http://www.americanheart.org

American Heart Association - Midwest Affiliate
2140 University Park Dr., Suite 210
Okemos, MI 48864-4073
517-349-3102

National Heart, Lung and Blood Institute
National Institutes of Health
P.O. Box 30105, Bethesda, MD 20824-0105
301-251-1222
http://www.nhlbi.nih.gov

METHODS

Mortality data were obtained from the 1980-2000 Michigan Resident Death File (MRDF) and hospitalization data were obtained from the 2000 Michigan Inpatient Data Base (MIDB) maintained by the Division for Vital Records and Health Statistics in the Michigan Department of Community Health.
MRDF certificates coded as ICD-9 390-398, 402, 404-429 (Diseases of the Heart) as the underlying cause of death were analyzed. The MIDB contains records of each admission for all short-stay acute care facilities in Michigan. Only cases with a primary diagnosis of ICD-9-CM 390-398, 402, 404-429 were included.
Population estimates for rate calculations were obtained from the Michigan Office of the State Demographer.
Death rates were age-adjusted by the direct method using the U.S. 2000 estimated population as the standard.
National age-adjusted rates were obtained from the National Center for Health Statistics.

1. Adapted from American Heart Association:http:/www.amhrt.org 1999
2. Adapted from Brownson RC, Remington PL, Davis JR: Cardiovascular Disease. *Chronic Disease Epidemiology and Control* Washington D.C. American Public Health Association. 1998

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For further information about the Diseases of the Heart Epidemiology Fact Sheet, contact the Epidemiology Services Division (517) 335-8806 or the Cardiovascular Health, Nutrition and Physical Activity Section (517) 335-8374 at the Michigan Department of Community Health.